

## REMARKS

The present invention provides a shortening product in which there is a high retention of micronutrients with low or no trans fatty acids. This is accomplished by:

- 1) interesterification of palm stearin, either by itself or as a constituent of palm oil with rice bran oil; and
- 2) crystallization in a margarine crystallizer (such as a scraped surface heat exchanger) under controlled conditions, Claims 6 - 11 specifying particular aspects of these controlled conditions.

None of the cited prior art taken individually or in combination points to the use of this particular combination of steps to produce a product with the high retention of micronutrients resulting from the present invention.

It is therefore submitted that the invention as claimed meets the requirements of 35 USC 103(a).

The Examiner argues that the invention as claimed in Claim 1 is obvious over a combination of Majumadar and Khatoon when combined additionally with Gunstone and Schijf.

Khatoon discloses interesterifying palm oil with a variety of other vegetable oils, including sunflower, rice, coconut and soybean oils and makes margarine from interesterified fat obtained from a blend of palm and sunflower oils. It concludes that melting characteristics of the interesterified fat obtained from the blend of refined red palm oil and sunflower oil blend in the ratio 4:1 would be an ideal margarine fat base (see abstract). However, it is not clear that any margarine-type product was obtained from the palm oil/rice bran oil blend. Slip melting points were

obtained and reported as 39.0°C and 37.9°C. These are high. It is well known in the art that a decrease in slip melting points enhances plasticity of shortenings and is a desirable characteristic. One skilled in the art would therefore not have had any reason to make margarine from the palm oil/rice bran oil interesterification product.

Majumdar describes interesterification of palm stearin with various vegetable oils including soybean, rapeseed, rice bran and mustard oils to yield a vanaspati of unhydrogenated type, the process involving bleaching under vacuum at  $110^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . Slow crystallization of the products was carried out for 16 hours at  $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The result in the case of the combination of palm stearin and rice bran oil is a product that is granular and depending on the relative amounts of the starting materials, may be ghee-like but without any phase separation and with more solid at the bottom. There is no use of a margarine crystallizer and the slip melting points of the product are 36.5°C and 38.5°C. These again do not point to making a margarine from this starting material (With the process of the present invention, the slip melting points of interesterified palm oil and rice bran oil shortenings in similar ratios are 31°C and 33°C).

Therefore nothing in these references would point one to utilizing a margarine crystallizer to produce a shortening from interesterified palm oil and rice bran oil.

The Examiner refers to Schijf and Gunstone for their disclosures of use of a margarine crystallizer with other interesterified fats and for their post-crystallization treatment of the product obtained. However, these are irrelevant since they do not overcome the basic defects with the two primary references. In any case, Schijf requires use of an aqueous phase prior to cooling in a crystallizer. This is not the procedure claimed in the present application.

It is therefore submitted that the claims meet the requirements of 35 USC 103.

In view of the foregoing, it is submitted that this application is in order for allowance and an early action to this end is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'J. Richards', is written over a horizontal line.

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